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<b>Application Number</b>	09/819,573
<b>Filing Date</b>	03/28/2001
<b>First Named Inventor</b>	KUCHI
<b>Group Art Unit</b>	2631
<b>Examiner Name</b>	CHEBRETINS
<b>Attorney Docket Number</b>	NC17533

Sheet	1	of	5
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FOREIGN PATENT DOCUMENTS							
Examiner Initials*	Cite No. <sup>1</sup>	Foreign Patent Document		Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T <sup>2</sup>
		Office <sup>3</sup>	Number <sup>4</sup>				
2		WO	97/41670		AT&T Corp.	11-06-1997	
2		WO	99/14871		AT&T Wireless Services, Inc.	03-25-1999	
2		WO	01/56218 A1		Telefonaktiebolaget LM Ericsson Inc.	08-02-2001	
2		WO	00/11806		Ericsson Inc.	03-02-2000	
2		WO	00/18056		Hughes Electronics Corp.	03-30-2000	
2		WO	00/49780		Motorola Inc.	08-24-2000	
2		WO	00/51265		Motorola Inc.	08-31-2000	
2		WO	01/19013 A1		Home Wireless Networks Inc	03-15-2001	
2		WO	01/63826 A1		Nokia Networks OY	08/30/2001	
2		WO	01/69814 A1		Nokia Networks OY	09/20/2001	

2/17/04

<sup>1</sup> Unique citation designation number. <sup>2</sup> See attached Kinds of U.S. Patent Documents. <sup>3</sup> Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>4</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>5</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. <sup>6</sup> Applicant is to place a check mark here if English language Translation is attached.

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**Application Number**

09/819.573

**Filing Date**

03/28/2001

**First Named Inventor**

KUCHT

### Group Art Unit

2631

**Examiner Name**

~~CHEBRETINSAE, T.~~

Attorney Docket Number

NC1 7533

## U.S. PATENT DOCUMENTS

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## FOREIGN PATENT DOCUMENTS

[illegible]

**Examiner  
Signature**

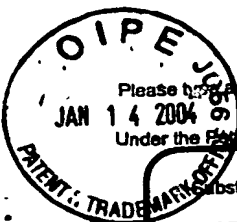
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# INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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Sheet **3** of **5**

## Complete if Known

Application Number	09/819,573
Filing Date	03/28/2001
First Named Inventor	KUCHT
Group Art Unit	2631
Examiner Name	CHEBRETINSAE, T.
Attorney Docket Number	NC17533

## OTHER PRIOR ART – NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>2</sup>
JK		D. MIHAI IONESCU; New Results on Space-Time Code Design Criteria; 1999 IEEE; pp. 684-687; 0-7803-5668-3/99;	
6		TAROKH, V., et al.; Space-Time Codes for High Data Rate Wireless Communication: Performance Criterion and Code Construction; 1998 IEEE; IEEE TRANSACTIONS ON INFORMATION THEORY, Vol. 44, No. 2, March 1998	
Q		Edited by HOLMA H., et al.; WCDMA for UMTS Radio Access for Third Generation Mobile Communications; Reprinted June 2000; page 97; John Wiley & Sons, Ltd., Baffins Lane, Chichester, West Sussex, PO19 1UD, England.	
Q		TAROKH, V., et al.; Space-Time Block Coding for Wireless Communications: Performance Results; 1999 IEEE; IEEE Journal on Selected Areas in Communications, Vol. 17, No. 3, March 1999	
Q		TAROKH, V. et al; New Detection Schemes for Transmit Diversity with No Channel Estimation; 1998 IEEE; pp. 917-920 0-7803-5106-1/98.	
Q		NAGUIB, A.F. et al; Space-Time Coded Modulation for High Data Rate Wireless Communications; 1997 IEEE; pp. 102-109; 0-7803-4198-8/97.	
Q		SHIU, D. et al.; "Scalable Layered Space-Time Codes for Wireless Communications: Performance Analysis and Design Criteria"; 0-7803-5668-3/99; 159-163 pp.; 1999 IEEE; University of California at Berkeley USA	
Q		ALAMOUTI, S.M. et al; Trellis-Coded Modulation and Transmit Diversity: Design Criteria and Performance Evaluation; 1998 IEEE; pp. 703-707; 0-7803-5106-1/98.	
Q		SHIU, D. et al.; "Layered Space-Time Codes for Wireless Communications Using Multiple Transmit Antennas"; 0-7803-5284-X/99; 436-440 pp.; 1999 IEEE; University of California at Berkeley USA	
Q		HASSIBI, B. et al; "High-Rate Linear Space-Time Codes"; IEEE April 2001; Pg2461-pg2464, 0-7803-7041-04/01.	
Q		LO, T. et al; Space-Time Block Coding - From a Physical Perspective; 1999 IEEE; pp. 154-158; 0-7803-5668-3/99.	

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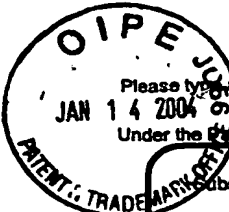
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Sheet

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Applicati n Number	09/819,573
Filing Date	03/28/2001
First Named Invent r	KUCHI, Kiro
Group Art Unit	2631
Examiner Name	GHEBRETINSAE, T.
Attorney Docket Number	NC18833

### OTHER PRIOR ART – NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>2</sup>
8		SESHADRI, N. et al; Space-Time Codes for Wireless Communication: Code Construction: 1997 IEEE; pp. 637-641; 0-7803-3659-3/97.	
8		TAROKH, V., et al.; The Application of Orthogonal Designs to Wireless Communication; 1998 IEEE; pp. 46-47; 0-7803-4408-1/98.	
8		TAROKH, V. et al; Space-Time Codes for High Data Rate Wireless Communication: Performance Criteria in the Presence of Channel Estimation Errors, Mobility, and Multiple Paths; 1999 IEEE; IEEE TRANSACTIONS ON COMMUNICATIONS; Vol. 47, No. 2; February 1999	
8		TAROKH, V. et al; A Differential Detection Scheme for Transmit Diversity; 1999 IEEE; pp. 1043-1047; 0-7803-5668-3/99.	
2		FOSCHINI, G.; Layered Space-Time Architecture for Wireless Communication in a Fading Environment When Using Multi-Element Antennas; Bell Labs Technical Journal, 1996; Pg41-Pg59.	
8		TIRKKONEN, O. et al.; Complex Space-Time Block Codes for Four Tx Antennas; IEEE; 2000; pg1005-pg1009; 0-7803-6451-1/10.	
2		HOTTINEN, A. et al.; Closed-loop transmit diversity techniques for multi-element transceivers; IEEE 2000; pg70-73; 0-7803-6507-0/00.	
2		TIRKKONEN, O. et al.; Minimal Non-Orthogonality Rate 1 Space-Time Block Code for 3+ Tx Antennas; IEEE Sept. 6-8, 2000; 6th Int. Symp. on Spread-Spectrum Tech. & Appl., NJIT, New Jersey, USA; pg429-pg432.	
2		SWEATMAN, C. et al.; A Comparison of Detection Algorithms including BLAST for Wireless Communication using Multiple Antennas; IEEE 2000; pg698-pg703; 0-7803-6465-5/00.	
2		DAMEN, O. et al.; Lattice Code Decoder for Space-Time Codes; IEEE 2000; pg161-pg163; 1089-7798/00; IEEE Communications Letters, Vol. 4, No. 5, May 2000.	
2		CALDERBANK, A. et al.; Space-Time Codes for Wireless Communication; 19997 IEEE; ISIT 1997, Ulm, Germany, June 29-July 4; pg146.	

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